

F-22 NOZZLE ACTUATOR PISTON RODS

COMPONENT PURPOSE/REQMTS:

- engine nozzle flaps control the velocity, and sometimes direction, of turbine exit gas flow
- actuator rods control divergent nozzle flaps

SELECTION CRITERIA:

- high specific strength and stiffness
- good fatigue resistance
- elevated operating temperature

MATERIAL:

- Ti-6Al-2Sn-4Zr-2Mo matrix composite (TMC) with Trimarc-1 SiC monofilaments
- produced by wire co-winding
- replaced solid rods of 13-8 precipitation-strengthened stainless steel

BENEFITS:

- direct weight savings of 3.4 kg (7.4 lb)/ shipset
- additional weight savings by removing counterbalance
- first introduction of TMCs provides manufacturing experience

